enjoy technology

i-Sigma

the complete line of lubricants for your truck
efficiency and reliability in all working conditions

eni

eni.com

i-Sigma

From **eni**'s research laboratories comes a complete line of lubricants for heavy-duty vehicles offering high efficiency and reliability and optimum protection of your truck engine.

Ever attentive to environmental issues, eni has produced a range of cutting edge lubricants that not only satisfy the typical requirements of the road haulage sector but offer enhanced environmental compatibility as well.

The i-Sigma line includes products employing reliable, tried-and-tested formulations as well as leading-edge technologies suitable for modern engines fitted with emission reducing exhaust gas after-treatment systems.

A number of the lubricants in the line have been specially formulated to provide better fuel economy and environmental protection. With i-Sigma, your engine is protected in even the most severe driving conditions and in all climatic conditions and temperatures.

I-Sigma lubricants can be safely used for the maximum oil drain interval recommended by the manufacturer while maintaining their initial performance levels.

the line of i-Sigma lubricants

top	**i-Sigma top MS 15W-40** API CJ-4/SM ACEA E9 MB-Approval 228.31 MAN M 3575 MTU Type 2.1 VOLVO VDS-4 Renault RLD-3 Cat ECF-3,2,1-a Deutz DQC III-05 Mack EO-O PP Cummins 20081 DD 93K218	**i-Sigma top MS 10W-40** API CI-4 ACEA E4,E6,E7 MB-Approval 228.51, MB 228.5, 226.9 MAN M 3477, 3271-1 MTU Type 3.1 VOLVO VDS-3 Renault RXD Scania LA	**i-Sigma top MS 10W-30** ACEA E7,E9 API CJ-4 MB-Approval 228.31 MAN M 3575 MTU type 2.1 VOLVO VDS-4 Renault RLD-3 JASO DH-2 CAT ECF-3 Cummins 20081	**i-Sigma top MS 5W-30** API CJ-4/SN ACEA E6,E7 E9 MB-Approval 228.51,MB 228.31 MTU Type 3.1 MAN M 3477, 3271-1 VOLVO VDS-4 MACK EO-O PP, EO-N, EO-M Plus JASO DH-2 CAT ECF-3 DEUTZ DQC IV-10 LA Renault RXD, RLD-3, RLD-2, RGD
		i-Sigma top 10W-40 API CF ACEA E4,E7 MB-Approval 228.5 MTU Type 3 MAN M 3277 Renault RXD VOLVO VDS-3 SCANIA LDF-3 Deutz DQC III-05 Cummins 20072 Voith Class A ZF 04C DAF Extended Drain		**i-Sigma top 5W-30** API CI-4 ACEA E4,E7 MB-Approval 228.5 MTU Type 3 MAN M 3277 Renault RXD,RLD,RLD2 VOLVO VDS-3 CAT ECF-2 Deutz DQC IV-05 MACK EO-M Plus
performance	**i-Sigma performance E7 15W-40** API CI-4 CH-4/SL ACEA 5,E7,E3,B3 MB-Approval 228.3 MTU Type 2 MAN M 3275 VOLVO VDS-3 Cummins 20078	**i-Sigma performance E4 10W-40** ACEA E4 MB-Approval 228.5 MTU Type 3 MAN M 3277		
	i-Sigma performance E3 15W-40 API CG-4 /SG ACEA E3, B3 MB-Approval 228.3 MTU Type 2 MAN M 3275 Renault RD ZF 04C			
universal	**i-Sigma universal 15W-40** API CG-4 /SL ACEA A3/B3-04, E2 MB 228.1, 229.1 quality MAN M 271 **i-Sigma universal DL 15W-40** API CF-4/SG ACEA E2,B2 MB 228.1 MAN M 271 VW 505 00	**i-Sigma universal 10W-40** API CI-4 ACEA E7, A3/B3/B4, JASO DH-1 GLOBAL DHD-1 MB-Approval 228.3, 229.1 MTU Type 2 MAN M 3275 VOLVO VDS-3 Renault RLD-2 Allison C4 level Cummins 20077/20078 Mack EO-M plus		

top MS

High technology product line designed to meet all heavy duty vehicle needs, meeting the most stringent performance specifications set by the top manufacturers in the sector. The line also includes lubricants designed specifically for new generation Euro V engines fitted with exhaust gas after-treatment system that require a special additive formulation to maintain their effectiveness. TOP MS lubricants may be used for the maximum recommended oil drain intervals.

top MS

5W-30

API CJ-4/SN ACEA E6,E7, E9
MB-Approval 228.51, MB 228.31
MTU Type 3.1 MAN M 3477, 3271-1
Volvo VDS-4 MACK EO-O PP, EO-N, EO-M Plus
JASO DH-2 CAT ECF-3
Deutz DQC IV-10 LA
Renault RXD,RLD-3,RLD-2, RGD

Top Synthetic Technology

High performance engine oil for heavy-duty vehicles based on latest generation synthetic technology. Suitable for Euro V and previous engines. Ideal for use with exhaust gas after-treatment system, offers optimum fuel-saving properties and excellent **cold start qualities**. Outstanding engine detergent and protection properties.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●●	✓	●●●●●	●●●●●	●●●●●	●●●●●

top MS

10W-30

ACEA E7,E9 API CJ-4 MB-Approval 228.31 MAN M 3575 MTU type 2.1 VOLVO VDS-4 Renault RLD-3 JASO DH-2 CAT ECF-3 Cummins 20081

Synthetic Technology

High performance engine oil for heavy-duty vehicles based on latest generation synthetic technology. Suitable for Euro V and previous engines. Ideal for use with exhaust gas after-treatment system, offers **optimum fuel-saving properties** and excellent cold starts qualities. Outstanding engine detergent and protection properties.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●●	✓	●●●●○	●●●●●	●●●●○	●●●●●

top MS

top MS

10W-40

API CI-4 ACEA E4,E6,E7
MB-Approval 228.51, MB
228.5, 226.9 MAN M 3477,
3271-1 MTU Type 3.1
VOLVO VDS-3 Renault
RXD Scania LA

Synthetic Technology

Engine oil for heavy-duty vehicles using latest generation synthetic technology. Suitable for Euro V engines and previous. Its **special additive formulation** is ideal for use with exhaust gas after-treatment system and will ensure their efficiency and long life. Offers optimum detergent and piston cleaning characteristic and excellent wear resistance properties.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●●	✓	●●●●○	●●●●●	●●●○○	●●●●●

top MS

15W-40

API CJ-4/SM ACEA E9
MB-Approval 228.31
MAN M 3575 MTU
Type 2.1 VOLVO VDS-4
Renault RLD-3 Cat
ECF-3,2,1-a Deutz DQC
III-05 Mack EO-O PP
Cummins 20081 DD 93K218

New generation engine oil suitable for use in latest heavy-duty diesel engines (Euro III to Euro V) especially those fitted with **exhaust gas after-treatment devices**. Suitable for severe driving conditions. Capable of extending oil drain intervals in accordance with recommendation by manufacturers. Ideal for use with Volvo and Caterpillar engines. Offers excellent detergency.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●●	✓	●●●○○	●●●●●	●●○○○	●●●●●

i-Sigma

top

High technology product line capable of meeting the most demanding heavy duty vehicle needs. Like the Top MS line, these lubricants are innovative top of the range products which offer excellent performance and maximum oil drain intervals.

top

5W-30

API CI-4 ACEA E4,E7
MB-Approval 228.5
MTU Type 3 MAN M 3277
Renault RXD,RLD,RLD2
VOLVO VDS-3 CAT ECF-2
Deutz DQC IV-05 MACK
EO-M Plus

Top Synthetic Technology

Engine oil using the latest synthetic technology. Suitable for lubricating diesel engines of heavy-duty vehicles operating in extremely severe conditions. Offers excellent **fuel-saving** characteristics and is especially recommended for long journeys. Can extend oil change interval to the maximum levels in accordance with recommendation by manufacturers. Ensures high fluidity at engine ignition even in extremely low temperatures.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●●	—	●●●●●	●●●●●	●●●●●	●●●●●

top

top

10W-40

API CF ACEA E4,E7
MB-Approval 228.5 MTU
Type 3 MAN M 3277
Renault RXD VOLVO
VDS-3 SCANIA LDF-3
Deutz DQC III-05
Cummins 20072 Voith
Class A ZF 04C DAF
Extended Drain

Synthetic Technology

Engine oil for heavy-duty vehicles employing high performance synthetic technology. Ideal for vehicles operating in **severe driving conditions**. Allows maximum oil drain intervals to be applied. Recommended for most sector manufacturers and for Scania engines in particular. Offers optimum detergent and piston-cleaning properties together with excellent wear resistance properties.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●●	—	●●●●○	●●●●●	●●●○○	●●●●●

performance

High-performance line for conventional engines providing excellent reliability and cleaning of mechanical parts. Permits application of optimum oil drain intervals and, like all eni lubricants, guarantees high level of engine protection and extended service life.

performance E4

10W-40

ACEA E4 MB-Approval 228.5 MTU Type 3 MAN M 3277

Synthetic Technology

Synthetic technology engine oil for heavy-duty vehicles, suitable for engines operating in severe conditions and guaranteeing maximum recommended oil drain intervals. Offers excellent detergent, piston-cleaning and anti-wear properties. **Protects the engine, ensuring efficiency even after many kilometres.**

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
4/5	—	5/5	5/5	3/5	4/5

performance E7

15W-40

API CI-4 CH-4/SL ACEA E5,E7,E3,B3 MB-Approval 228.3 MTU Type 2 MAN M 3275 VOLVO VDS-3 Cummins 20078

High performance engine oil for heavy-duty vehicles meeting ACEA E7/E5, providing **excellent detergent and dispersant properties**. Its dependable and experienced formula offers extended oil drain intervals and high engine protection.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●○	—	●●●○○	●●●○○	●●○○○	●●●●○

performance E3

15W-40

API CG-4 /SG ACEA E3 B3 MB-Approval 228.3 MTU Type 2 MAN M 3275 Renault RD ZF 04C

Engine oil recommended for most heavy-duty diesel engines guaranteeing extended oil drain intervals. **Can also be safely and effectively used in vehicles used for local and long-distance freight and passenger transport and in diesel passenger cars.** Optimum long-term reliability under all operating conditions.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●○	—	●●●○○	●●●○○	●●○○○	●●●○○

iSigma

universal

Line of high performance lubricants suitable for heavy and light duty vehicles that can also be used in gasoline engines. Ideal for lubrication of mixed vehicles fleets. The lubricants comprising the universal line comply with stringent specifications and protect the engine from wear and deposits on the pistons.

universal

10W-40

API CI-4 ACEA E7, A3/B3/B4
JASO DH-1 GLOBAL DHD-1
MB-Approval 228.3, 229.1
MTU Type 2 MAN M 3275
VOLVO VDS-3
Renault RLD-2 Allison C4
level Cummins
20077/20078 Mack EO-M plus

Synthetic Technology

Synthetic technology diesel engine oil offering excellent fuel economy. Complies with stringent specifications both in the heavy-duty sector and in the passenger car sector and is therefore ideal for both. **Recommended for trucks, buses, work site machinery, vans and cars. Also suitable for use in gasoline engines.**

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●●○	—	●●●●○	●●●●○	●●●○○	●●●●●

universal

15W-40

API CG-4 /SL ACEA
A3/B3-04, E2
MB 228.1, 229.1 quality
MAN M 271

Diesel engine oil ideal for trucks, buses, work site machinery, vans and cars. Also suitable for use in gasoline engines. Guarantees the same quality, protection and detergent standards in all fields of application.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●○○	—	●●●○○	●●○○○	●●○○○	●●●●○

universal DL

15W-40

API CF-4/SG ACEA E2,B2
MB 228.1

Diesel engine oil ideal for **trucks, buses, work site machinery, vans and cars**. Guarantees the same quality, protection and detergent standards in all fields of application.

drain interval	after-treatment systems compatibility	cold start qualities	engine protection	fuel economy	multi OEM
●●●○○	—	●●●○○	●●○○○	●●○○○	●●●●○

not everyone knows that

What are the main functions of a lubricant?

- Keep moving surfaces separate under all load, temperature and speed conditions.
- Act as a coolant, removing the heat produced by friction or external sources.
- Maintain its stability for its entire service life.
- Protect surfaces from atmospheric agents or aggressive products formed during combustion.

What are the key properties of a lubricant?

Lubricants are classified based on:

- their degree of viscosity;
- their compliance with a performance specification.

Viscosity describes a fluid's internal resistance to flow; it indicates fluidity but is not a performance indicator. For adequate lubrication in all temperature and load conditions, a film of oil must be formed between the mechanical parts which prevents them from coming into contact with each other. An oil must be fluid when cold so that it can immediately reach the parts that require lubricating, and viscous when hot so that it remains in contact with the parts requiring lubrication and support loads. An overly viscous oil increases losses through viscous friction and increases fuel consumption by increasing the power absorbed by the oil pump when the engine is ignited. Performance specifications, meanwhile, are used to classify lubricants based on their performance and specific use.

What does compliance with a performance specification mean?

It means that at least the minimum quality levels set by the specification are guaranteed. Compliance with a specification can only be claimed if a product has passed all the tests required by the specification.

Each specification includes a list of tests and limit values.

Tests include laboratory tests, bench tests and road tests.

- The vehicle manufacturer is responsible for defining the lubricant performance specification for a specific vehicle model.
- The lubricant manufacturer is responsible for ensuring that the product complies with the claimed levels.
- A lubricant can comply with one or more performance specifications and one or more lubricants can comply with a given performance specification.

What do the letters SAE XW-Y on the packaging mean?

Today's oils are multigrade, meaning they can be used in a wide range of temperatures. This is made possible by additives that allow an oil to pass from a low to a high temperature while maintaining the required viscosity characteristics (and thus the correct film thickness, which varies in accordance with viscosity). The international table drawn up by the SAE (Society of Automotive Engineers) classifies lubricants on the basis of their viscosity measured under two conditions: at 100 °C and at low temperatures (from -35°C to -10°C depending on the winter grading). Lubricant manufactures indicate the relevant classification on their packaging using the letters SAE XW-Y.

The SAE "W" (W stands for "winter") viscosity range goes from 0W to 25W and represents viscosity at low temperature.

To establish the W grading, the viscosity of the lubricant is measured at temperatures between -30°C and -5°C. The classification achieved is the minimum temperature at which the engine will start and at which the oil can be pumped.

The other value represents the viscosity measured at 100 °C: SAE grades of between 20 and 60, which correspond to increasing viscosity values.

What are API and ACEA?

API is the American Petroleum Institute. It classifies engine oils using a two-letter code. The first letter identifies the type of engine for which it is produced: "S" (Service) indicates gasoline engine oils, while "C" (Commercial), is used for diesel engine oils. The second letter indicates the performance level. The later the letter in the alphabet, the higher and more advanced the performance level. A new letter is assigned to each new revision.
A more recent API specification is therefore generally more stringent than an older specification.
The latest classifications are API SN for gasoline engines and API CI-4 for diesel engines (the 4 indicates a 4-stroke diesel engine).

ACEA is the European Automobile Manufacturers' Association and has 4 different standards depending on engine type and use.
The classification consists of a letter indicating the type of engine and a number referring to uses and applications within a given category.
Category "A" is for gasoline engines, "B" is for diesel engines and are both specifically for light-duty vehicles.
Category "C" (Catalyst Compatible) is for passenger car engines but also requires a lubricant to be compatible with the exhaust gas after-treatment systems found in new generation vehicles.
Category "E" refers to heavy-duty engines. Unlike the API specifications, a higher category in numerical terms does not necessarily signify better performance. It is therefore important to refer to a vehicle's user and maintenance manual for indications.
Complying with an ACEA specification means passing a long series of motoring tests and certifying every formula used. All formulations must be registered with the ACEA and cannot be modified by the manufacturer.

- Some manufacturers do not have proprietary specifications but make reference to performance levels set by API or ACEA.
- Others, meanwhile, have decided to maintain their own system of specifications, which are often defined on the basis of the minimum API and / or ACEA levels.

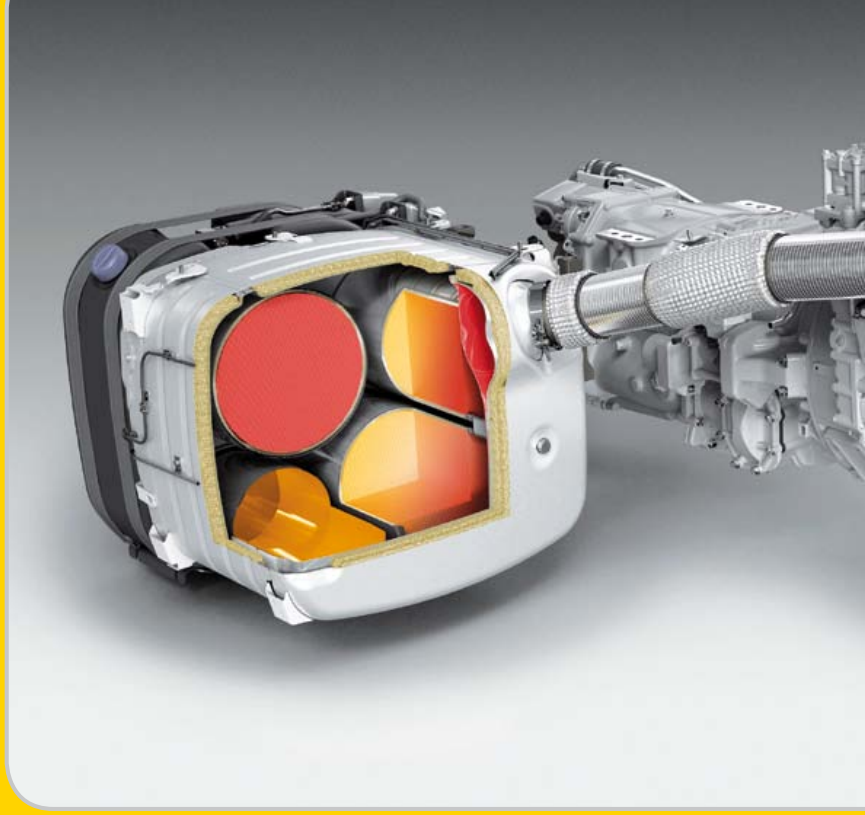
What are vehicle manufacturer performance levels?

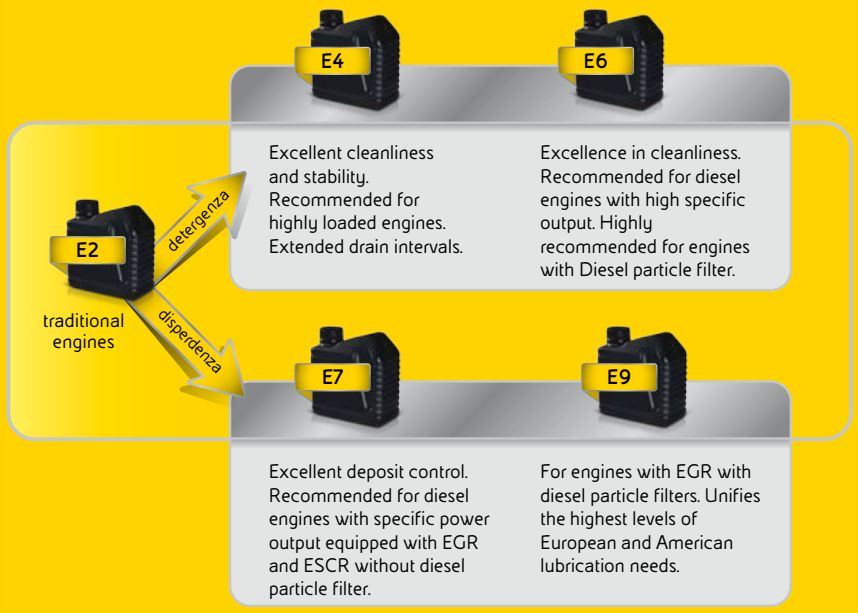
Some vehicle manufacturers also have their own system of specifications. In some cases, they may have more than one for each of the different type of vehicles they make. These specifications are based on minimum API and / or ACEA levels but may also include the manufacturer's own engine or performance tests. This system may also include an official in-house certification system.

Why have the new engines fitted with after-treatment systems (in particular, diesel Euro 4 and Euro 5) led to a new generation of ACEA lubricant specifications?

Some components of the exhaust gas after-treatment systems (the particle filters especially) are sensitive to certain chemical substances present in the fuels or lubricants and specifically to: sulphated ash, phosphorus, and sulphur.
Such vehicles require special oils called "Low SAPS" or "mid SAPS" (where SAPS stands for Sulphated Ash, Phosphorus and Sulphur) whose formulas contain low levels of these elements. eni has developed a range of lubricants possessing these characteristics with varying degrees of viscosity:

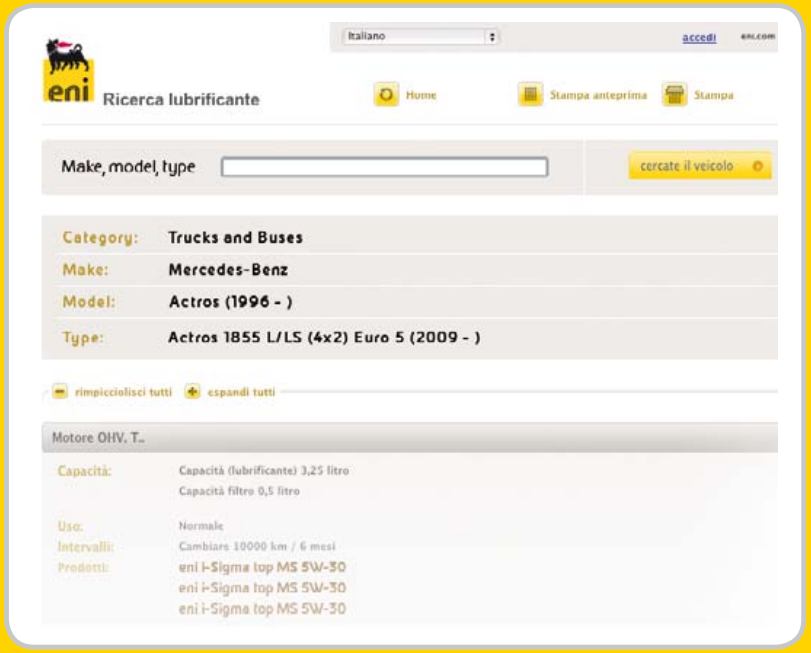
- i-SIGMA top MS 5W-30
- i-SIGMA top MS 10W-30
- i-SIGMA top MS 10W-40
- i-SIGMA top MS 15W-40





Which ACEA levels are for heavy-duty engines?

ACEA category "E" is specific for heavy-duty engines. The ACEA category E levels for heavy-duty vehicles are: E4, E6, E7 and E9.
All other specifications are obsolete.
The figure on the left shows the differences between the various specifications. However, this figure provides only a general overview and you should refer to your vehicle maintenance manual and bear in mind load, road and climatic conditions.



Are there oils which increase fuel economy?

Of course. eni has developed a series of lubricants which, thanks to the latest generation technology and their special fluidity characteristics, greatly reduce the friction between the moving parts of an engine, resulting in reduced dissipation of energy and therefore lower fuel consumption.
These oils also rapidly lubricate all parts of the engine at start up and at very low temperatures, reducing energy dissipation (which is higher at start-up than when the engine is running) and contributing further to reduced consumption.
It is worthwhile remembering that reduced fuel consumption also reduces greenhouse gases, including CO2 (carbon dioxide).
These products are:

- i-SIGMA top MS 5W-30
- i-SIGMA top MS 10W-30
- i-SIGMA top 5W-30

How can I find out which oil I should use for my vehicle?

Visit the eni website - eni.com - and click on:
- products > automotive lubricants > find the right lubricants for your vehicle

Enter the information requested and click on list oil type. A page will be displayed listing the eni oils you should use.

Where can I buy i-SIGMA?

At specialist truck dealers and eni/Agip service stations.

multicard

Multicard is eni's fuel card that offers numerous services to professional hauliers:

- rapid, secure self-service transactions 24 hours a day, with fully automated pay machines connected directly to the pumps;
- Truck-dedicated facilities and services at more than 250 specialised service stations ("R4T selected sites") throughout Europe;
- an extensive network of over 18,000 service stations, allowing card holders to buy high quality fuel, lubricants and services without using cash in 35 European countries, including all stations operated by our partners in the ROUTEX network;
- multicard online, a web-based system allowing cardholders to plan fuel stops, check purchases and obtain detailed invoices.

AdBlue®

AdBlue® is a **32.5 per cent urea** solution compatible with the new SCR (selection catalytic reduction) technology used by the major European truck makers which achieves the triple aim of improving engine performance, reducing consumption and significantly reducing exhaust gas emissions.
It is a transparent, odourless liquid whose characteristics are regulated at European level by the **ISO 22241** standard.
AdBlue® is not a fuel as it is not injected into the combustion chamber and is therefore not subject to excise tax or other duties. It is not classified as harmful to human health or the environment.
It is not flammable or explosive.

The **AdBlue®** trademark is owned by the German Association of the Automotive Industry (VDA) which guarantees that the quality standards are maintained in accordance with the specifications of ISO 22241.
Check that the products you buy for your vehicles have the **AdBlue®** registered trademark on the label. If you buy **AdBlue®** at eni/Agip service stations you can be sure you have purchased synthetic quality **AdBlue®** that is fully compliant with the specifications established for its use with SCR technology.
It is important to make sure vehicles do not run out of **AdBlue®** because severe penalties may be applied if the onboard control system indicates the **AdBlue®** tank is empty.
This ensures that NOx emissions remain below the limits established by law.

Multicard holders can buy AdBlue® in 10 litre cans at many service stations in Europe while the number of stations that offer it at the pump continues to grow.
The presence of **AdBlue®** at our service stations demonstrates our commitment to improving the quality of the services and products offered, to meet the needs of all engines and all vehicles while respecting environmental issues.

AdBlue®

refining & marketing

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